



Occurrence Details

Occurrence Number: 105B 026

Occurrence Name: Atom

Occurrence Type: Hard-rock

Status: Prospect

Date printed: 6/16/2025 1:12:05 AM

General Information

Secondary Commodities: bismuth, lead, silver, zinc

Aliases: Crescent Lake

Deposit Type(s): Skarn Pb-Zn

Location(s): 60°11'19" N - -131°13'25" W

NTS Mapsheet(s): 105B03

Location Comments: .5 Kilometres

Hand Samples Available: No

Last Reviewed:

Capsule

Work History

Staked as Atom cl (56254) in Sep/46 by Hudson Bay Mining & Smelting, which carried out trenching and drilling in 1947. Restaked as Dell cl (89445) in Oct/65 by Babwick and Armstrong for Gulliver Mining & Exploration Ltd, as Twins cl (Y7390) and Von cl (Y13110) in May and June/66 and Bud cl 1-18 (Y22939) in May/68 by Boswell River Mines Ltd, which carried out bulldozer trenching later in the year. Restaked as Reg cl 3-4 (Y83208) in Aug/74 by M. Pollard who trenched in 1980.

The north and east showings were restaked as Brave cl (YA33740) in Jul/78 by J. Weins and as Lake cl 1-4, Reg cl 1-4, Kelly cl 1-8 and Lori cl 1-8 (YA50351) in Jul/80 by J.G. Robertson for the Flame Syndicate, which added Fall cl 1-39 and Park cl 1-32 (YA69132) in Oct/82 and transferred the property to Flame Petro-Minerals Corporation later in the year. The north showing was restaked as Queen cl 1-4 (YA70704) in Oct/83 by D. Schellenberg, who trenched in 1984, and as Blackstone cl 1-4 (YA99870) in Sep/86 by R. Stack.

Restaked as Key cl 1-30 (YB09486) in Nov/87 by First Yukon Silver Resources Inc, which trenched in 1989 and tied on Sam cl 1-86 (YB15973) to the north in Aug/89. By this time the company also controlled the adjoining occurrences located at Minfile Occurrence #105B 027.

First Yukon trenched on the Park 43 and 45 claims and on the Key 3, 13 and 15 claims in July and August 1992. Cominco Ltd optioned the property and conducted a program of line cutting, trenching and diamond drilling on the Park and Key claims in Jul/93. Cominco dropped its option in Dec/93.

In Apr/97, Birch Mountain Resources Ltd acquired an option to earn 100% interest in the property (this occurrence and the Bar/Dan, Minfile Occurrence #105B 027 located along regional trend to the southeast) from First Yukon Silver Resources Inc. The company carried out geological mapping, excavator trenching, geochemical sampling, magnetic and EM geophysical surveys and drilled 4 diamond drill holes (319.7 m) later that year. In Mar/99 the company dropped its option on the property and returned the claims to First Yukon.

In Aug/99 First Yukon began re-mapping all of the occurrences on the entire property in extreme detail, in an effort to improve their understanding of the depositional and structural history of the rocks and mineralization processes in the area. No new geological mapping was conducted on any of the 3 showings associated with this occurrence. (D'el-Rey Silva et al., Part I, 2001).

In Jan/2002 Minfile Occurrence 105B 026A was restaked as Humbling cl 1-4 (YB93595) by D. Brown. Later in the year, Brown re-mapped in detail the existing trenches located on the claims.

First Yukon Silver Resources optioned the entire Swift River property in Nov/2004 to Expatriate Resources Ltd in return for Expatriate paying cash in lieu of assessment work and granting First Yukon Silver a 1% net smelter return. In Dec/2004 Expatriate shareholders approved a plan of arrangement whereby most of Expatriate Resources non-Finlayson Lake district exploration properties were transferred to a new company, Pacifica Resources Ltd. The Swift River Property remained with Expatriate Resources, which changed its name to Yukon Zinc Corporation.

Capsule Geology

The area is located 21 km north of the Yukon-British Columbia border, northeast of Swift River, Yukon and has been re-mapped by the Ancient Pacific Margin NATMAP Project (Roots et al., 2004). The occurrence lies, on strike, 6 km west of the neighboring Bar/Dan occurrence (Minfile Occurrence #105B 027). It is also less than 10 km northeast of the Cretaceous Seagull Batholith and less than 2 km southwest of the Cassiar Batholith.

The occurrence is underlain by the Ram Creek assemblage (mainly Mississippian age), a narrow belt of clastic and volcanic rocks that trends 45 km in a northwesterly direction between the Cassiar Platform to the northeast and Dorsey assemblage to the southwest. Harms and Stevens 1996, originally assigned the Ram Creek assemblage to the Dorsey terrane but it is now generally accepted to be part of the Yukon-Tanana terrane. The Ram Creek assemblage appears to be composed of structurally interleaved slices of oceanic and continental crustal rocks. The Ram Creek thrust fault thrusts the assemblage northeastwards onto Lower Devonian to Lower Mississippian clastic metasedimentary rocks assigned to the Earn Group.

Black sphalerite occurs with pyrrhotite, pyrite, magnetite and lesser amounts of galena and chalcopyrite in garnet-diopside-actinolite calc-silicate hornfels developed in limy bands within metavolcanic rocks of the Ram Creek assemblage.

Excavator trenching exposed two main showings 800 m apart. The Upper Crescent Lake showing (Minfile Occurrence #105B 26C), consists of a 2 m wide layer of massive sulphide skarn with a strike length of about 50 m, hosted by a finely banded calc-silicate hornfels. A sample of mineralized float from this area assayed 8.95% Zn, 67.2 ppm Ag and anomalous Cu, Pb, As, Sb, Ba and Au.

The Lower Crescent Lake showing (Minfile Occurrence #105B 26A) consists of garnet-magnetite-sphalerite skarn associated with massive garnet-pyrrhotite-chlorite skarn containing two generations of garnet. Banded hornfels in this area consist of alternating layers of garnet-epidote and quartz-chlorite. A weakly magnetic massive sulphide specimen from this area assayed 7.0% Zn and 55 ppb Au.

The work of Boswell River Mines showed that both of the Crescent Lake showings had associated strong magnetic anomalies and anomalous soil anomalies, containing more than 600 ppm Zn. The base metals were emplaced with actinolite, magnetite and chlorite during retrograde thermal metamorphism which may be related to the intrusion of the large Cretaceous Seagull batholith or the smaller Jurassic diorite tonalite. The Crescent Lake showings closely resembles the Bar/Dan prospect (Minfile Occurrence #105B 027) 6 km along strike to the east.

Soil sampling outlined several strong zinc anomalies mid-way between the Atom/Crescent and Bar/(Dan showings. In 1991, follow-up trenching, centred on the anomalies and a large area of pyrrhotite gossan delineated the 'Gossan' zone (Minfile Occurrence #105B 026B). The Gossan zone is comprised of large boulders of grey-green meta-tuff containing variable amounts of sphalerite and chalcopyrite in an overburden-covered area immediately downslope from outcrops of magnetite-diopside-calcite skarn.

Cominco's drill tested the Gossan zone with four drill holes but the assay data was not supplied. The holes appear to have intersected mostly calc-silicate skarn and biotite hornfels with occasional thin lenses of mudstone/siltstone and volcanic material.

Birch Mountain resampled and remapped all of the known showings with the aim of identifying new areas of potential mineralization. The geophysics program was geared towards trying to locate and extend the strike of the main mineralized horizons which lie across the width of the claim block. Three drill holes tested the Lower and Upper Crescent Lake showings. The holes mainly intersected rhyolite and andesitic tuffs and clastic sediments. Hole DDHSR-09 intersected porphyritic diorite at the bottom of the hole which likely represents a Jurassic intrusive.

The best results were returned from DDHSR-08 which was collared near the Upper Crescent Lake showing. It returned 4.67% Zn over 4.85 m and 3.3% Zn over 2.75 m. Birch Mountain reinterpreted the numerous showings as boudins of previously continuous strata-bound sulfide beds occurring at a number of stratigraphic horizons and suggested a syn-sedimentary exhalative origin for the mineralization.

Geological mapping carried out by First Yukon reinterpreted the finely-banded siliceous rock units at the occurrence as a rhyolite and the cherty layers as exhalites. This led to the theory that mineralization previously described as being skarn due to the pyroxene-amphibole-garnet silicate mineral assemblages were in fact stratabound massive sulphide type (VMS). This theory was expanded to explain mineralization at neighboring occurrences. The company believes that the greatest potential for additional mineralization lies to the south. Detailed geological mapping completed by Brown on the 4 Humbling claims shows that the northern portion of the claims are underlain by a sequence of black chert and often pyritic siltstone assigned to the Earn Group. The remaining portion of the claims are underlain by volcano-sedimentary units of the Ram Creek assemblage. Stratigraphic interpretation resulting from the detailed mapping shows that Birch Mountain's 1997 drill hole (97-07) did not intersect all of the massive sphalerite mineralization seen in surface outcrops.

References

BIRCH MOUNTAIN RESOURCES LTD, Nov/97. Assessment Report #093884 by S.P. Santiago and V. Pratico.

BIRCH MOUNTAIN RESOURCES LTD, Jun/97. Assessment Report #093886 by A. Mann.

BIRCH MOUNTAIN RESOURCES LTD, Sep/98. Assessment Report #093904 by G. DePaoli.

BOSWELL RIVER MINES LTD, Nov/66. Prospectus Report #018616 by P.H. Sevensma.

BOSWELL RIVER MINES LTD, Jul/67. Assessment Report #060682 by P.H. Sevensma.

BOSWELL RIVER MINES LTD, 1970. Assessment Report #060877 by H. Wober.

BOSWELL RIVER MINES LTD, 1970. Assessment Report #060878 by R.O. Crosby.

BOSWELL RIVER MINES LTD, Aug/71. Assessment Report #060879 by H. Wober.

BROWN, D. Apr/2003. Assessment Report #094369 by T. Liverton.

COMINCO LTD, Oct/93. Assessment Report #093134 by P. MacRobbie.

DAWSON, K.M., and DICK, L.A., 1978. Regional metallogeny of the Northern Cordillera: tungsten and base metal-bearing skarns in southeastern Yukon and southwestern Mackenzie. Geological Survey of Canada, Paper 78-1A, p. 291.

D'EL REY SILVA, L.J.H. et al., 2001. A structural analysis of the upper Swift River area (105B\3), Yukon. Part 1: Dan Zn occurrence and implications for sulfide mineralization. In: Yukon Exploration and Geology 2000, D.S. Emond and L.H. Weston (eds.), Exploration and Geological Services Division, Yukon, Indian and Northern Affairs Canada, p. 289-300.

DICK, L.A., 1980. A comparative study of the geology, mineralogy, and conditions of formation of contact metasomatic mineral deposits in the northeastern Canadian Cordillera. Unpublished Ph.D thesis, Queen's University, p. 8, 163-166, 194, 205, 409.

EXPATRIATE RESOURCES LTD, News Releases. 18 Nov/2004; 15 Dec/2004.

EXPATRIATE RESOURCES LTD, Feb/2004. Web Site: www.expatriateresources.com

FIRST YUKON SILVER RESOURCES INC, Mar/89. Assessment Report #092686 by D. Schellenberg.

HARMS T.A. AND STEVENS, R.A. 1995. Investigations in the Dorsey terrane, Part 2: lithologies and structure of (?) Paleozoic stratified rocks in the Stikine Ranges, northern British Columbia; in Current Research 1995-A; Geological Survey of Canada, p. 129-133.

LIVERTON, T. AND BREMNER, T. 1990. The Dan Property. In: Yukon Exploration 1991. Exploration and Geological Services Division, Indian and Northern Affairs Canada, p. 27-30.

MORTENSEN, J.K. AND GABITES, J. E., 2002. Lead Isotopes constraints on the metallogeny of southern Wolf Lake, southeastern Teslin and northern Jennings river map areas, Yukon and British Columbia: Preliminary results. In: Yukon Exploration and Geology 2001, D.S. Emond, L.H. Weston and L.L. Lewis (eds.), Exploration and Geological Services Division, Yukon Region, Indian and Northern Affairs Canada, p. 179-188.

POOLE, W.H., 1956. Geology of the Cassiar Mountains. Unpublished Ph.D thesis, Princeton University, 241 p.

ROOTS, C.F. ET AL., 2000. Revision mapping of the Yukon Tanana and equivalent terranes in northern British Columbia and southern Yukon Territory between 1310 and 1320 W; Geological Survey of Canada, Current Research 2000-A4, 10p.

ROOTS, C., NELSON, J., AND STEVENS, R., 2004. Bedrock Geology, Seagull Creek, Yukon Territory; Geological Survey of Canada, Open File 4632; Yukon Geological Survey, Open File 2004-1, scale 1:50 000.

WESTERN MINER, Dec/47, p. 35.

YUKON EXPLORATION 1990, p. 25, 26; 1991, p. 9, 10.

YUKON EXPLORATION AND GEOLOGY 1997, p. 20, 37, 38; 1998, p. 20.

YUKON GEOLOGY AND EXPLORATION 1979-80, p. 144.

Work History

Date	Work Type	Comment
12/31/2002	Geology	Conducted around Minfile Occurrence #105B 026A.
12/31/1999	Geology	
12/31/1997	Drilling	Nine holes, 900 m.
12/31/1997	Ground Geophysics	

12/31/1989	Trenching	
12/31/1984	Trenching	
12/31/1980	Trenching	
12/31/1968	Trenching	
12/31/1947	Drilling	Number of holes and footage not reported.
12/31/1947	Trenching	
12/13/1992	Drilling	Eight holes, 1,581.4 m.
12/13/1992	Trenching	

Assessment Reports that overlap occurrence

Report Number	Year	Title	Worktypes	Holes Drilled	Meters Drilled
094828	2007	Assessment Report 2006 Describing Air-FTG Survey Geophysical Work on the Swift Project	Reverse Circulation - Airborne Geophysics		
094662	2006	Assessment Report Describing Prospecting on the: Swift River Property	Soil - Geochemistry, Line Cutting - Other		
094369	2002	Detailed Mapping and Re-Evaluation of the 'Knee' Zinc Mineralization Swift River, Yukon	Detailed Bedrock Mapping - Geology		
093884	1997	Assessment Report on the Swift River Property, Yukon Territory	Diamond - Drilling, Rock - Geochemistry, Silt - Geochemistry, Soil - Geochemistry, Bedrock Mapping - Geology, EM - Ground Geophysics, Magnetics - Ground Geophysics, Line Cutting - Other, Backhoe - Trenching	9	956.10
092686	1988	Summary of 1988 Work Program Swift River Project	Soil - Geochemistry, Line Cutting - Other, Backhoe - Trenching		
060877	1971	Preliminary Report on the Swift River Property of Boswell River Mines Ltd.	Detailed Bedrock Mapping - Geology		
060878	1970	Report on Airborne Geophysical Surveys Swift River Property, Yukon Territory on Behalf of Boswell River Mines Ltd.	Electromagnetic - Airborne Geophysics, Magnetic - Airborne Geophysics		

Related References

Number	Title	Page(s)	Reference Type	Document Type
ARMC007640	Claim map with 1993 grid and drill hole locations - Swift River option		Property File Collection	Geoscience Map (General)
ARMC007641	Compiled zinc soil geochemistry map - Swift River option		Property File Collection	Geochemical Map
ARMC007642	Geology and D.D.H. locations map - Swift River option		Property File Collection	Geoscience Map (Geological - Bedrock)
ARMC013369	Plan showing claim location map Max 1 to 50, Sam 1 to 21 - Max & Sam groups - Boswell River Mines Ltd. - Swift River area, Y.T.		Property File Collection	Geoscience Map (General)